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| 10/085,063      | 03/01/2002  | Toshiyuki Arai       | 501.41261X00        | 9140             |

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ANTONELLI, TERRY, STOUT & KRAUS, LLP  
1300 NORTH SEVENTEENTH STREET  
SUITE 1800  
ARLINGTON, VA 22209-9889

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| EXAMINER |
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TRAN, BINH X

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| ART UNIT | PAPER NUMBER |
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1765

DATE MAILED: 05/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                             |  |
|------------------------------|-------------------------------|-----------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/085,063 | Applicant(s)<br>ARAI ET AL. |  |
|                              | Examiner<br>Binh X Tran       | Art Unit<br>1765            |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.  
 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.  
 4a) Of the above claim(s) 12, 17, 24 and 28 is/are withdrawn from consideration.  
 5) ☒ Claim(s) 1-8, 31 and 32 is/are allowed.  
 6) ☒ Claim(s) 9-11, 13-16, 18-23, 25-27, 29 and 30 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☒ Claim(s) 1-32 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>06/03/2002</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Species I (claims 1-3, 5-7, 9-11, 13-16, 18-21, 23, 25-27, and 29-32) in Paper filed on 4-26-2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). It appears that applicants inadvertently did not include/identify that claim 22 belong to the elected Species I in the above response. Claim 22 should belong to Species I. For purpose of the examination, the examiner will consider that claim 22 belongs to the elected Species I.

2. Claims 4\*, 8\*, 12, 17, 24 and 28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species. Election was made **without** traverse in Paper filed on 4-26-2004.

\*Note: Claims 4 and 8 are later re-rejoined upon the allowance of the generic claims 1 and 5 (See allowance subject matter section for further detail).

### *Specification*

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 9, 13-14, 18 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for forming or removing "the first conductive layer", does not reasonably provide enablement for forming or patterning "third insulative film". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Applicants do not claim how to form the "first insulative film" and the "second insulative film" in the above claims. It is impossible to form "third insulative film" without forming "first insulative" and "second insulative film" previously. Hence, the scope of the claim is not commensurate with the scope of enabling disclosure.

Claims 10-11, 13, 15-16, 18 are rejected under 35 U.S.C. 112, first paragraph, because they directly or indirectly depend on independent claim 9 or 14.

6. Claims 21, 25 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for forming or removing "the first conductive layer", does not reasonably provide enablement for forming or patterning "fourth insulative film". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Applicants do not claim how to form the "first insulative film", "second insulative film" and "third insulative film" in the above claims. It is impossible to form "fourth insulative film" without forming "first insulative", "second insulative film" and

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"third insulative film" previously. Hence, the scope of the claim is not commensurate with the scope of enabling disclosure.

Claims 22-23, 26-27 are rejected under 35 U.S.C. 112, first paragraph, because they directly or indirectly depend on independent claim 21 or 25.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 29-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In step (c) of claims 29-30, "patterning the insulative film" lack antecedent basis and indefinite. The examiner suggests replacing "patterning the insulative film" with --patterning the first insulative film--.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Held (US 6,509,270) in view of Yamasaki et al. (US 6,683,007).

Respect to claims 19-20, Held discloses the method comprising the steps of:

forming a first conductive layer (12) on a semiconductor wafer (10) (col. 13-14);

removing the first conductive film on an edge (area 14) of the semiconductor wafer with a polishing means using a slurry (Fig 6, col. 14).

Held fails to disclose the step of patterning the first conductive layer to form a wiring layer. In a semiconductor process, Yamasaki teaches to pattern the first conductive layer (42) to form the wirings (col. 15-16). Yamasaki further discloses that the conductive layer (42) is patterned before the edge removal step (step S4, see col. 15) and after the edge removal step (col. 16). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Held in view of Yamasaki by patterned the conductive layer to form wirings because they can act as interconnection layers in a semiconductor device.

#### ***Allowable Subject Matter***

11. Claims 1, 5 are generic and allowable. Accordingly, the restriction requirement as to the encompassed species is hereby withdrawn and claims 4, 7, directed to the species of "dry etching or wet etching" (SpeciesII) are no longer withdrawn from consideration since all of the claims to this species depend from or otherwise include each of the limitations of an allowed generic claim. However, claims 12, 17, 24 and 28, directed to the species II remain withdrawn from consideration since they do not all depend upon or otherwise include all the limitations of an allowed generic claim as required by 37 CFR 1.141.

In view of the above noted withdrawal of the restriction requirement as to the linked species, applicant(s) are advised that if any claim(s) depending from or including all the limitations of the allowable generic linking claim(s) be presented in a continuation or divisional application, such claims may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

10. Claims 1-8 and 31-32 are allowed.

12. Claim 29-30 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

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13. The following is a statement of reasons for the indication of allowable subject matter: The cited prior arts fail to disclose or suggest the step of mechanically and chemically polishing a surface of the second insulative film in the same sequential order as disclosed in conjunction with all other limitations in the claims. In closest prior arts (Iwamatsu) teaches to remove the first and the second insulative film on the edge of the wafer in a single etching step using the resist as a mask (Fig 12-13).

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Billington et al. (US 6,482,749), Yoshida et al. (US 6,232,201), Hakomori (US 6,159,081), Iwamatsu et al. (US 6,150,696).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X Tran whose telephone number is (571) 272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Binh X. Tran

**NADINE G. NORTON**  
**SUPERVISORY PATENT EXAMINER**  
*Nadine*